

We have no doubt that our plant is what is mentioned by Fries, Hym. Eur. p. 575. It forms confluent patches many inches in length.

2026. *Stereum rubiginosum*, Fr. Hym. Eur. p. 641.

On decaying wood, Penzance, J. Ralfs. A very different species from *S. tabacinum*.

2027. *S. stratosum*, B. & Br. Effusum, læte ochraceoalbum glabrum lutescens hic illic rugosum, contextu pallido stratoso, stratis demum solutis.

Penzance, J. Ralfs.

At no. 1962 for "*Marasmius*" read "*Hygrophorus*." We are glad of this opportunity of correcting an unfortunate error, as this is, in all probability, the last of a long series of notices.

#### XLIV.—*Mochlonyx* (*Tipula*) *culiciformis*, De Geer.

By F. MEINERT\*.

IN the year 1776 De Geer, in his 'Mémoires pour servir à l'histoire des Insectes' (tome vi. p. 372), described the development of a small midge or gnat, *Tipula culiciformis*, and gave (on pl. xxiii. figs. 3-12) figures of the larva and pupa and of the male imago. De Geer had found the larva in the month of May in pools and swamps ("des étangs et des marais") and successfully bred them; but since that time no one seems to have met with the larva, indeed the imago itself seems not to be known, and some doubt has arisen as to the correctness of the developmental history given by De Geer, notwithstanding that author expressly states that he had reared both pupa and imago. In the months of April and May of last year (1882) I was fortunate enough to capture the larva in various places in this neighbourhood and to rear the gnat, by which means it appeared that De Geer's description was exactly in accordance with the truth. At present, however, I shall confine myself to describing the imago itself and indicating its place in the system, reserving the description of the larva and pupa for a general working up of the great number of midge and gnat larvæ upon which I have been at work for a long time, and which I hope to have ready in the course of the present year.

\* Translated by W. S. Dallas, F.L.S., from the 'Oversigt af Konglige Danske Videnskabernes Selskabs Forhandlinger,' 1883, no. 1, pp. 1-17.

De Geer seems only to have known the male, as he only describes and figures that sex; but unfortunately the description is very incomplete, and the figures are not much better. Nevertheless upon this description and these figures a distinct genus, *Corethra*, was afterwards established, and for this genus De Geer's species was thus the type. Subsequently other small flies were also either transferred to the genus *Corethra* (such as *Tipula plumicornis*, Fab., which, under the name of "*Corethra plumicornis*," is one of the best-known and most frequently examined insects) or established as new species of *Corethra* (such as *C. pallida*); but until now no one seems to have found De Geer's gnat, unless the *Corethra velutina*, described by Ruthe in the 'Isis' for 1831, should be identical with De Geer's *Tipula culiciformis*\*, which, however, is not probable.

De Geer's diagnosis of the imago runs as follows:—"Tipule brune, à antennes filiformes en plumes dans le mâle, à ventre et pattes grises, et dont les nervures des ailes sont velues." "*Tipula (culiciformis) fusca*, antennis filiformibus maris plumosis, abdomine pedibusque griseis, costis alarum hirtis." In conclusion he gives (*l. c.* p. 378) a fuller description of the imago; but in this he adds nothing to what he gives in the diagnosis or what can be seen in the figures (figs. 11 and 12), except that the antennæ are stated to be black.

In the "Versuch einer neuen Gattungs-Eintheilung der europäischen zweiflügeligen Insekten, von Joh. Wilh. Meigen," which Illiger published in his 'Magazin für Insektenkunde' (Bd. ii. pp. 259-281, 1803), Meigen established the genus *Corethra*, and cited as the single or typical species of that genus *Tipula culiciformis*, De Geer (*l. c.* p. 260). Also in

\* For synonymic purposes Walker's *Mochlonyx effætus* ('Insecta Britannica,' Diptera, iii. p. 252) and Gimmerthal's *Corethra pilipes* (Bull. Moscou, ii. p. 287), as well as Van der Wulp's *Corethra obscuripes* (Tijdschr. Entom. Nederl. Vereen, ii. p. 160), should be examined; but this was impossible for me, and I doubt whether others will gain much advantage by it.

[It is to be remarked that Walker, or rather Haliday, the real authority for this part of the 'Insecta Britannica,' not only describes *Mochlonyx effætus*, as above cited, but also cites De Geer's *Tipula culiciformis* as a species of *Corethra*. He describes both sexes of the latter, and notices the species as "not generally common, but sometimes appearing in great profusion." He describes the antennæ in *Corethra* as fourteen-jointed, and those of *Mochlonyx* as sixteen-jointed; but the figure of the male antenna of *M. velutinus* shows only fifteen joints. On the other hand, Meinert's figures which accompany the present paper in the Danish original show the male antennæ of fifteen, and those of the female of fourteen joints, although from his description the number would appear to be the same in both sexes.—W. S. D.]

his classical work, 'Systematische Beschreibung der bekannten europäischen zweiflügeligen Insekten' (1818, Th. i.), Meigen left the insect in the same systematic position (*l. c.* p. 16); but here he states that he had not seen the animal, for which he reproduces De Geer's diagnosis, which, after generic characters were cut out, comes to run as follows in the Latin translation:—"Fusca, abdomine pedibusque griseis."

Henceforward De Geer's *Tipula culiciformis* bears the generic name *Corethra*, and under the denomination of *Corethra culiciformis* we meet with it both in general manuals, such as Cuvier's 'Règne Animal' (ed. ii. 1829, tome v. p. 441), where this species alone is named in the genus *Corethra*, and in special entomological systems and text-books, as in Latreille's 'Genera Crustaceorum et Insectorum' (tome iv. 1809, p. 247), where *C. culiciformis*, Meigen, is cited, with a reference to De Geer, as the type species, while Réaumur's and Slabber's *Tipularia* (= *C. plumicornis*) are referred to it with some doubt ("pertinere videntur"). In Kirby and Spence's 'Introduction to Entomology' (vol. ii. 1817, p. 322, German translation), in Westwood's 'Introduction to the Modern Classification of Insects' (vol. ii. 1840, p. 515), and in the regular systematic and faunistic works on the Diptera also, *Corethra culiciformis* is named again and again; nay we even find a detailed description and figures of a species so named. It is Lehmann\* who has described and figured a male *Corethra* as the *C. culiciformis* cited but not seen by Meigen. It is not, however, De Geer's *Tipula culiciformis* that he describes, but probably the *Corethra fusca* established by Stæger.

Subsequently doubts began to arise as to the correctness of the reference of *Tipula culiciformis* to *Corethra*, or more properly to *Corethra* with *Tipula plumicornis*, Fab., as its type. Stæger may be named as the first who expressed this doubt. In his "Systematisk Fortegnelse over de i Danmark hidtil fundne Diptera" (Naturh. Tidsskr. Bd. ii. 1838-39, p. 556) he established a new species, *Corethra fusca*, and referred to it doubtfully Meigen's and Macquart's *Corethra culiciformis* (= *Tipula culiciformis*, De Geer). He speaks as follows:—"This species may perhaps be *Corethra culiciformis*, Meig., Macq.; but the *Tipula culiciformis*, De Geer, cited by these authors, the larva of which is figured in the

\* "Insectorum species nonnullæ vel novæ vel minus cognitæ, in agro Hamburgensi captæ, ex ordine Dipteriorum. Descripsit et illustravit J. G. C. Lehmann," Nova Acta Acad. Cæs. Leop. Carol. xii. (1825), pp. 29-248, tab. xv. Reprint of 'Zoologicarum præsertim in faunam Hamburgensem observationum pugillus primus' (1822), pp. 38-46.

form of a *Culex* larva, may be different." As we see here, it is the larval form of *C. culiciformis*, and the great difference that exists between this larva and the larva of another species of the same genus, *C. plumicornis*, Fab., long previously described and figured by Réaumur, Goeze, Slabber, Lehmann, Goring, and Lyonnet, that called forth in Stæger this exceedingly justifiable doubt as to the correctness of the synonym. Besides the doubt came the more home to Stæger, or was the more justified in him, as he had reared his new species, *Corethra fusca*, from a larva which certainly differed in two essential structural characters from the larva of *C. plumicornis*, but the differences of which are confined within probable limits. But that the differences were far from being so great as Stæger believed, and especially that the larva comes much nearer to the larvæ of *Corethra* than to those of *Culex*, nay, that the newly discovered larva of *Corethra fusca* in its most essential differences from the larva of *Corethra plumicornis*, namely the cleft setæ in the tail- and swimming-fins, agrees with De Geer's larva, Stæger could not well see—in any case he did not take it into consideration; and he had not, any more than any one else since De Geer, himself seen the larva of "*Tipula culiciformis*." It was the external resemblance in habit to *Culex*-larvæ which had already struck De Geer, and perhaps also especially the posterior breathing-tube that had raised doubts in Stæger. The same doubts, moreover, were expressed soon after by Westwood in his 'Introduction' (l. c. p. 515), who says, "I fear there must have been some errors either in De Geer's observation or in Latreille's synonym, inasmuch as Réaumur's figures of the transformations of a species described as *Corethra plumicornis* totally differ from De Geer's."

Zetterstedt, in the 'Diptera Scandinaviæ' (tom. ix. 1850, pp. 3474 *et seq.*), exactly follows Stæger, and also cites Meigen's and Macquart's *C. culiciformis* with doubt under Stæger's *C. fusca*. Upon this he says, in note 1, "*Tipula culiciformis*, De Geer, ob larvam tamquam larvæ Culicis similem ibidem descriptam, nec 'flavicantem, hyalinam, pelucidam' (qualis larva *C. fuscæ* deprehensa), a D. Stæger ut a *C. fusca* diversa species habetur."

From a faunistic point of view it is very remarkable that neither Stæger, who was an industrious collector of Diptera, especially in the neighbourhood of Copenhagen, nor Zetterstedt, who, besides his own and all the Swedish collections, also received from collectors in this country, and especially from Stæger, all their Diptera for examination, should have met with *Tipula culiciformis*, or its exceedingly peculiar and easily

recognizable larval form; for in the few years that I have specially studied our midge-larvæ I have found this larva distributed from Ruderhegn in the north, to Boserup Skov in the west, and Valle in the south; even in Dyrehave, not far from Ordrupsmose, Stæger's favourite collecting-place, I have met with it in great abundance; and it also occurs in the collection of larvæ in the University Zoological Museum. However, it is a fact well known to collectors that many animals have certain periods during which they nearly disappear, and others in which they occur abundantly.

When we say that Zetterstedt did not know *Tipula culiciformis* as Danish or Scandinavian, it must be borne in mind, nevertheless, that in his first treatment of the genus *Corethra* (*l. c.* p. 3475, note 2) he remarks that Wahlberg, perhaps, was acquainted with it:—"In annotationibus mecum communicatis dixit Cel. Prof. Wahlberg, se ad Gusum Ostrogothiæ et ad Holmiam *Corethram culiciformem* invenisse. Si vero eadem ut nostra *C. fusca* aut Degeerii *C. culiciformis* sit habenda, dijudicare non possum, cum specimina Wahlbergiana cum nostris comparare non potui." It may also be noticed that in the 'Diptera Scandinaviæ,' tom. xii. seu supplementum tertium (1855), p. 4837, he cites *Corethra velutina*, Ruthe, as new for the Scandinavian fauna; for it is possible that *Tipula culiciformis* is here intended, and, in any case, it seems to me nearly certain that this species may belong to the same genus as *C. culiciformis*, as will appear from what follows.

Schiner also ('Fauna Austriaca: Die Fliegen (Diptera),' Bd. ii. 1864) did not know *Tipula culiciformis*, but simply cites it among the European species occurring outside of Austria, referring to De Geer's description in his 'Mémoires,' *l. c.*

But while the species thus seems to have disappeared, or not to have been met with since De Geer's time, and the genus *Corethra*, as that genus is now formulated with *C. plumicornis* as the type species, does not agree with *T. culiciformis*, another genus, *Mochlonyx*, has been established, to which it would appear that De Geer's species may fairly be referred\*. The establishment of this genus took place as follows:—

\* Strictly speaking, the generic name *Corethra* should be retained for *Tipula culiciformis*, De Geer; and when other species, such as *Corethra plumicornis* and *pallida*, were afterwards proved to belong to a different genus from this first-named species, a new generic name ought to have been selected for them. But I regard it as very hazardous to introduce changes of name for such a well-known species as *C. plumicornis*, which

As early as the year 1831, Ruthe, in "Einige Bemerkungen und Nachträge zu Meigen's 'Systematische Beschreibung der europäischen Zweiflügeligen Insekten,'" ('Isis,' 1831, pp. 1203-22), described a new gnat under the name of *Corethra velutina*, which he stated to be very nearly allied to *C. culiciformis*, Meig. (or rather De G.), but which, besides the colour and clothing, could be easily distinguished by the proportions of the tarsal joints, and by the structure of the last joint and the claws. He seems to have captured only a single male. Among the characters of the new species the particular statement of the very short first tarsal joint could not but strike so distinguished a dipterologist as Loew\*; and in his "Beschreibungen einiger neuen Gattungen der europäischen Dipterenfauna" (Ent. Zeit. Jahrg. v., 1844) he took occasion to establish, for Ruthe's *Corethra velutina*, a new genus, *Mochlonyx*, which he characterized (l. c. p. 121, note) as follows:—"Mochlonyx, M., a genus coming next to *Corethra*, which, among other things, is very easily distinguished from the latter by its first tarsal joint being very short, namely, one fourth the length of the second, the fifth of the same structure as in *Liponeura*, and the claws bifid at the apex, and furnished at the base with a downwardly directed process (vid. tab. i. fig. 11)." The figure cited gives a rather rough representation of the last tarsal joint with the claws. The character of *Mochlonyx* here given may certainly be regarded as stating the chief differences as compared with the nearly allied genus *Corethra*; but besides that it is too scanty, and therefore insufficient to give a zoological image of the new generic form, it has the further great imperfection that it is made solely from the male, and that the character taken from the structure of the last claw-joint with the claws, which alone are figured, does not apply to the female, which has far simpler claw-joints and claws. For in this genus we find the unusual case that the sexes differ not only in the usual way in the structure of the antennæ, head (including the mouth parts), and the generative organs, but that also the claw-joints and the claws differ according to the sex.

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bears one of the best-known of zoological names, and the larva of which has acquired a classical reputation as the object of histological investigations. If such a change is eventually to be made, it had better remain over for some future monograph of this group. [See also note p. 375.—W.S.D.]

\* Zetterstedt, who also, in his third supplement, has Ruthe's species, *Corethra velutina*, from Öland, makes no remark upon this character, but seems not to have been acquainted with Loew's article here cited, although it had appeared eleven years before.

Schiner, in his 'Fauna Austriaca' (p. 622), adopts the genus *Mochlonyx*, and gives, from individuals which he obtained from Loew, a description of it, drawn up with constant references to *Corethra* and in his usual pattern of generic descriptions; but we learn nothing new from it.

From all this I think that a complete description both of the genus in its two sexes and of De Geer's so long misunderstood species, *Tipula culiciformis*, will not be out of place. . . . From this it will appear that, although the two genera [*Mochlonyx* and *Corethra*] come very near together, especially in the female sex, there are nevertheless besides those differences between the sexes which are so characteristic of the new genus sufficient characters for the establishment of the two genera. The likeness between the imagines of the genera is the more remarkable as the difference between the larvæ and pupæ, and especially between the larvæ, is so great; but, on the other hand, there are other genera among the true Culicidæ, such as *Culex* and *Anopheles*, of which the imagines, at any rate in one sex\*, are so like as to lead to confusion, while the larvæ are exceedingly different, inasmuch as some of them have and others are destitute of external breathing-tubes, therefore a difference similar to that between the larvæ of *Corethra plumicornis* and *Mochlonyx culiciformis*. Here, both with regard to the undescribed larva of *Anopheles* and the other more or less known midge-larvæ, I may refer to the great memoir upon these larvæ, which, as already stated, I shall soon be able to complete; and in the meanwhile the reader must content himself, as regards the larvæ of *Mochlonyx*, with De Geer's rather rough representation (*l. c.* pl. xxiii. figs. 3-9).

As it would occupy too much time and lead me too far should I establish an independent scheme of the genera of Culicidæ, and I should, moreover, run the risk of producing nothing better than we already possess, I shall here avail myself of Schiner's, as elaborated by him in his 'Fauna Austriaca,' and introduce into it various new characters.

### Familia Culicidæ.

#### Genus MOCHLONYX.

*Mochlonyx*, Loew, Ent. Zeit. Stettin, Jahrg. v. p. 121, note.

*Corethra*, Ruthe, Zetterstedt.

Magnitudinis mediocris species figuram *Culicis* sensu strictissimo quodammodo referunt.

\* Thus with regard to *Culex nemorosus* see Zetterstedt (*l. c.* p. 3458, note):—"Caveas ne hunc cum *Anophele bifasciato* confundas."

Caput in transversum rotundatum; proboscis producta, labrum partem dimidiam articuli tertii (secundi autt.) attingens; cultelli feminae breves, dimidiam partem scalpelli fere æquantés, membranacei, lati, angustati; scalpella labrum fere æquantia; palpi antennis maris vix duplo, aut feminae sesqui breviores, quinque-articulati, articulo ultimo quam penultimo manifesto longiore.

Antennæ protrusæ, quattuordecim-articulatæ, articulo basali maris disciformi, feminae depresso conico, articulis obscure fusiformibus, corona setarum maris multo longiore atque densiore, articulis binis ultimis pertenuibus, longis, ultimo manifesto brevior.

Oculi magni, globosi, maris subluniformes; macula ocularis magna, discreta.

Ocelli desunt.

Scutum dorsale fornicatum, ante propendens, simplex. Scutellum parvum.

Abdomen novem-annulatum, protrusum, angustum; forceps copularis maris productus, stylo in formam cochlearis producti redacto, ad apicem aculeo parvo, cultriformi instructo (infra duæ laminæ chitinæ in uncum validiorem, liberum extus, desinunt); forceps feminae brevis, aduncus.

Pedes producti, tenues, dense hirsuti; articulus primus tarsi (metatarsus) secundo pluries brevior, articulus ultimus pedum maris ad basin tumidus setisque incurvis instructus; feminae simplex; ungues producti, graciles, ad basin breviter hirsuti atque processu longiore crenulato instructi; ungues maris præterea ad apicem dente producto, tenui armati; onychium productum, flexuosum, pertenuè, processus multos, filiformes e lateribus emittens.

Alæ productæ, angustæ, costis dense hirsutis, fimbria densa, duplici in margine ornata; costa longitudinalis quinta ante costam transversalem postremam ramum superiorem, prope ad marginem admodum curvatum, emittens; cellula basalis utraque integra; cellula discoidalis deest; lobi basales alæ admodum protrusæ; halteres liberi.

Metamorphosis *M. culiciformis* a De Geer descripta; larvæ in aqua vitam degunt; victus rapax.

The species are of medium size or perhaps rather small, like the species of *Corethra*; in habit, although they come very near the last-named midges, they nevertheless in some respects more resemble the species of *Culex* than the true midges. Nearly the same may be said of the other genera here under consideration; the larvæ of *Culex* and *Mochlonyx* in habit come nearer to each other than the larvæ of *Mochlonyx* and *Corethra*, but the relation is reversed when we take into consideration the essential characters.



The *head* is rounded; the parts of the mouth with the second metamere of the head are protruded, oval; the *proboscis* is protruded and comparatively large. The *labrum* is elongated, narrowed, slightly arched forwards, with a pair of setæ inserted on the lower surface a little behind the apex; the dorsal plate of the first metamere (*scutum dorsale metameri primi*) is but very short, and the larger part of the labrum is therefore the posterior, and it is supported at the sides by the long thin lateral pieces (*epipharynx*), which may easily be traced back to the pharynx from which they start\*. The *hypopharynx* is long, compressed, strongly pointed; it forms a deep boat-shaped channel, the anterior extremity of which runs out into two short horns, and the sides of which, on their outer margins, are furnished with a close fringe of long very fine setæ. Of the *salivary duct* I have seen no trace either in males or females. The *proboscis*, as already stated, is extended, and the basal part (*scutum ventrale metameri primi* or *mentum* autt.) is large and strongly beset with hairs. The *ligula* is long and conical. The *labella* are distinctly two-jointed, broad, rounded off in front, with their inner angles produced into a short point; no inner supporting apparatus is to be seen. The *sculpella* (*maxillæ* autt.) are tolerably long, very acute, thin, nearly membranous, and reach in length about to the middle of the labrum or halfway up the third joint of the palpus. The pleural processes or *cuttelli* (*mandibule* autt.) as usual occur only in the females; they are a good deal shorter than the sculpella, and of a broader and more obtuse form, but likewise thin and membranous †. The

\* In presence of the objection lately urged by Kræpelin (Zool. Anz. 1882, p. 576) against the opinion put forward by Menzies and defended by Dinmock and myself, that the labrum may be regarded as a fusion of two different pieces or parts, I willingly admit that the labrum presents itself as "eine einfache Ausstülpung des Kopfes;" but nevertheless I think that the epipharynx cannot be called either an "Ausstülpung" or a "Hohraum," but only a chitinous prolongation of the upper margin of the pharynx; and it seems to me not improbable that similar chitinous processes may become amalgamated with or lodge themselves in the dorsal part of a metamere. For me therefore there can be no question of a fusion of two "Ausstülpungen" or of two "Hohräume."

† In a morphological point of view these pleural processes are of great interest, for in *Mochlonyx* (and likewise in *Corethra*) they distinctly appear as simple processes without any trace of articulations, so that it is very difficult or impossible to assimilate them with the mandibles such as we know them in insects with biting mouth-organs (and Hymenoptera). But neither can it be denied that they correspond exactly with the organs which are known under the name of mandibles in the females of *Culex*, *Ceratopogon*, *Simulium*, and *Tabanus*, and which I have described in most of the genera or families here mentioned under the name of pleural processes or *cuttelli* (cf. Trophi. Dipteriorum: Fluernes Munddele).

*palpi* are long, thin, strongly hairy and five-jointed. There is no great difference between the absolute lengths of the palpi in the male and female, but compared with the antennæ they are to them in the males in the proportion of 1 : 2, in the females of 2 : 3. The first two joints are very short, together about half the length of the third joint; the last joint is a little longer than the penultimate. In opposition to Meigen, Zetterstedt, and Schiner, I regard the palpi as commencing with two short clavate joints, considering the constriction that occurs as sufficient to constitute a joint, although this constriction does not go round the whole circumference.

The *antennæ* are extended, rather long, in the males with very long and close, in the females with much shorter and thinner, circlets of setæ. The length of the setæ increases somewhat posteriorly, and on the last antennal joint the setæ are suddenly much shorter and fewer in number. The number of antennal joints is fourteen in both sexes; but while in the females the joints are nearly cylindrical, about equal in length, only the last joint being recognizably longer than the penultimate (about as 6 : 5), in the males the joints are fusiform in inverse proportion to their length; and further, the middle joint is distinctly shorter than the others, of which again the penultimate joint is suddenly longer than the preceding one (over twice as long) and considerably longer than the following one (about as 4 : 3). The first joint is very short and thick, especially in the male, in which it is nearly disciform.

The *eyes* are naked and occupy about half the upper surface of the head in the female, in which they are also slightly incurved; in the male they are comparatively smaller, but more strongly incurved; on the lower surface they are narrow and crescentiform. The facets are large, round, very convex. The eye-spots (*macule oculares*) are large and well separated from the eyes.

The *dorsal shield* (*scutum dorsale*) is large, very convex, slightly projecting above the head, without a transverse suture. The scutellum is small.

The *abdomen* is long, slender, slightly narrowed posteriorly, with numerous and long hairs, nine-jointed\*; the penultimate segment is suddenly much shorter than the preceding, and the last segment again much shorter than the penultimate.

The external generative organs of the male are very large,

\* Schiner counts eight segments in the abdomen, and this number is also given for *Corethra* by Meigen and Schiner; nay Zetterstedt even says of *Corethra* (l. c. p. 3470), "Abdomen 8-annulatum (segmenta tantum 7 numero)."

the basal joint of the forceps especially being very stout. The styles, on the contrary, are slender and slightly cochleariform, and bear at the apex, besides the very small and fine tactile setæ, a small cultriform spine. Opposed to the styles are a pair of short but strongly chitinized hooks, which are inserted into the body as broad, somewhat dilated, posteriorly rounded chitinous plates, with the posterior margin deeply emarginate. The external genitalia of the female are short and stout.

The *legs* are long, thin, densely hairy, and the first joint of the tarsi (*metatarsi*) is several times shorter than the second. The proportion between these two joints in the male is for the first pair of legs as 1 : 6, for the second pair as 1 : 5, and for the third pair as 1 : 4. In the female, on the other hand, the proportion for all three pairs of legs is as 1 : 5\*. The second tarsal joint is always the longest of all; in the male on all the tarsi a little more than twice as long as the third; in the female on the first two pairs of legs not quite twice the length, but on the third pair rather more than twice as long. The last joint, or the claw-joint, is simple in the female, but in the male it is inflated at the base, where it bears a quantity of large incurved setæ. The *claws* are long and slender; in the male they are relatively longer and thinner; from the middle of their inner margin starts a large, thin, slightly bent tooth, and from their basal part a short, pretty straight, crenulated process; in the female the claws are simple, but the basal processes are comparatively longer and more strongly denticulated. The *onychium* consists of a long seta, which is somewhat thickened at its basal extremity, but produced in front into a very long, thin, somewhat bent or twisted thread, which bifurcates at the end, but before this emits from its sides rows of teeth as fine as hairs.

The *wings* are long and narrow, and the nervures are closely beset with short setæ arranged in pairs along them; the transverse nervures, however, are naked. The fringe of the wings consists of a double row of setæ or lance-shaped spines, of which the upper series, or those which are attached to the upper surface of the wing, are, at any rate on the posterior margin, about half as long again as the setæ in the series which is attached to the lower surface of the wing. It is in the posterior margin of the wing that these setæ attain their highest development and most strongly marked lanceolate

\* Ruthe gives the proportion in *Mochlonyx* (*Corethra*) *velutina* for the fore legs as barely 1 : 4:—"das erste Glied aller Füße viel kürzer als das zweyte und dritte, an den vorderen Füßen verhältnissmässig noch kürzer und nicht den vierten Theil des zweyten erreichend."

form, with the supports of the blades from two to three times their thickness in length; but towards the apex of the wing the lanceolate form disappears more and more, and on the anterior margin of the wing they become setæ of the ordinary form. The second and fourth longitudinal nervures are bifurcated; the fifth longitudinal nervure emits, a little before the transverse nervure, a nervure towards the margin of the wing, which, however, does not reach the latter, but runs for some space parallel to it. Both marginal cells are entire; the discoidal cell is wanting.

The development, so far as *Mochlonyx culiciformis* is concerned, is described by De Geer. The larvæ live in water, and travel in the same way as the larvæ of *Corethra*. They live by rapine, and when pressed by hunger devour each other.

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With regard to the generic characters of *Corethra*, the following points may be indicated in contradistinction to *Mochlonyx*:—

Of the mouth-parts the *cultelli* (in the female) are smaller and attain only a fourth part of the length of the third joint of the palpi.

The *eyes* are more strongly sinuated than in *Mochlonyx*.

The external *genitalia* of the male are somewhat slighter, and the styles are destitute of the cultriform spine at their apex. The prehensile hooks are further much shorter, with a short inner lamella, and do not reach beyond the posterior margin of the last abdominal segment.

The *legs* present the essential generic distinction from *Mochlonyx*; but while in the latter genus they are exceedingly different according to the sexes, especially as regards the claw-joint and the claws, they are here pretty nearly alike in both sexes. In *Corethra* the proportion between the lengths of the tarsal joints is a pretty regular decrease from the first to the last joint, and the last joint, in both sexes, is normally constructed. The claws are rather long and slender, finely haired from the base to beyond the middle. The lateral processes are flat, broad, and cut at the edge into many teeth as fine as hairs. The onychium is much shorter than in *Mochlonyx*, and cleft at the apex into four long hair-like teeth.

The *wings* are a little broader and more acute, and the fourth longitudinal nervure divides rather higher up; the side-nervure emitted by the fifth longitudinal nervure is also much shorter and terminates a little before reaching the margin of the wing, but without following it. In the fringes the setæ of the lower short series are comparatively shorter; but in

this particular some specific difference prevails, the difference mentioned not being so great in *Corethra pallida*.

The *larvæ*, on the contrary, are extremely different; but it must also be pointed out that even within the genus *Corethra* there is no inconsiderable difference between the species, for according to Stæger (*l. c.* p. 556) the swimming-fans in the larvæ of his *C. fusca* do not consist of fringed setæ (as in *C. plumicornis*), but of cleft setæ (as in *Mochlonyx*).

*Mochlonyx culiciformis, De Geer.*

*Tipula culiciformis, De Geer, Mém. pour servir à l'histoire des Insectes, tome vi. p. 372, pl. xxiii. figs. 3-12.*

Fusco-brunnea, ferrugineo-pilosa, thorace linea media dorsali duplici obscura notato, metanoto nigrescente, abdomine pallido, scutis dorsalibus maximam partem dense nigro-fusco irroratis. Palpi antennæque nigro-fusca, antennis feminae late, ant. maris anguste dilute balteatis, apice setarum cinerascentibus. Halteres pallidi, capitulo brunnescente. Pedes dilute flavi, genibus apiceque articulorum priorum tarsalium articulisque posterioribus vel posticis totis fusciscentibus. Alæ maris fumatæ, al. feminae ante flavescentes. Long.  $2\frac{1}{2}$ -3<sup>m</sup>.

The indications of colour are drawn up from old dry specimens, as required for systematic analytical purposes; from fresh individuals or spirit-specimens they would run as follows:—The colour of the animal is dark brownish grey, but a broad band or spot on the anterior margins of segments two to seven of the abdomen above is chalky white. The under surface of the abdomen is milk-white anteriorly, but posteriorly it becomes more and more brownish, with a small oval blackish-brown transverse spot on the anterior margins of segments three and four. The legs, especially on the under-side, are milk-white, but the upper surface of the femora and tibiæ is somewhat brownish, as also the apices of the femora and tibiæ; the first and second tarsal joints, the greater part of the third, and the whole of the fourth and fifth joints, are still darker; the last joint especially is remarkably dark. The antennæ are milk-white, but the apex of each joint is broadly black. The palpi are blackish grey; the halteres milk-white, with the knob brown. The underside of the head and prothorax are milk-white, as also the base of the wings, the rest of which are greyish, immaculate. The setæ on the thorax are whitish grey or slightly yellowish; the long setæ on the lateral margins of the abdomen pale greyish; on the legs the setæ are blackish grey or black, as also on the antennæ, the dense tufts of which, however, have a brownish tint.

I have not met with the imago in the open, but from the larvæ, which occurred in the beginning of April last year, in Boserup Skov and Jægersborg Dyrehave, a great number both of males and females were produced between the middle of April and the beginning of May.

XLV.—*Notice of a new Genus and Species of Lucanoid Coleoptera*. By CHARLES O. WATERHOUSE.

AUXICERUS, n. gen.

General characters of *Scortizus*; very depressed. The anterior coxæ only a little separated; the prosternum not produced into a process posteriorly. Mesosternum sloping down in front. The four posterior tibiæ straight and not armed with a spine on the outside. Eyes not divided by the canthus.

♂. Mandibles a little longer than the head, horizontal, acuminate, and slightly curved. Head large and broader than long, the anterior angles produced into an acute process.

Clypeal margin emarginate. Basal joint of the antennæ as long as the head (measured in the middle), flexuous; the second to seventh joints slender, about twice as long as broad; the first and second joints of the club with the lamellæ occupying only the apical half of the joint, so that the lamellæ are widely separated from each other; the lamella is only spongy on the side which is towards the apex; the apical joint is compressed, reniform, and spongy, except the base, which is shining. Thorax transverse, the posterior angles obliquely emarginate. Mentum strongly transverse, rounded at the sides, widely emarginate at the apex.

*Auxicerus platyceps*, sp. n.

♂. Parallelus, sat depressus, opacus, pallide squamosus; mandibulis porrectis, apicem versus acuminatis, basi denticulatis; capite lato, medio planato, angulis anticis supra obtuse carinatis, longe acute productis, divergentibus; thorace capite vix latiori, medio convexo, canaliculato, lateribus piceis, angulis anticis prominulis, angulis posticis oblique emarginatis; elytris thorace paulo angustioribus, parallelis, ad apicem arcuatim angustatis, regione suturali depresso, crebre, evidenter punctato, macula humerali, altera laterali ante apicem obscure piceis, macula sub humero, fascia pone medium undulata, plagaque apicali squamarum pallidarum